

To what extent do terrorist attacks affect public sentiment surrounding immigration and refugee policy? A case study of the Stockholm terrorist attack, April 2017.

29.8.2024

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Computational Social Sciences Masters Thesis

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INTRODUCTION

Europe and the world at large stand at an interesting point in history, where a highly globalized world means ease of movement, trade and knowledge sharing, which can allow for amazing opportunities for society and people all over the world, but it can also bring pain and suffering to many through unintended consequences. The planet is warming at unprecedented rates, with global temperatures only expected to rise in the future, already creating climate refugees heading to European border states to escape extreme weather or natural disasters. War, unrest and political and economic crises have also prompted mass migration to Europe. (Saraiva, 2023) In 2015, Europe faced the unprecedented migrant crisis and saw 1.3 million refugees entering the EU (Connor, 2016).

In modern society and in the age of most of the European population living in large metropolitan cities, terrorism is something that has been feared in Europe. (Mitchell, 2014) As European cities have faced terrorist attacks in the past decades, with many of them being from islamic or jihadist groups, the effect of these attacks on public sentiment is interesting to study. Especially as the religious extremization of migrants is a fear of the consequences of insufficient integration of migrants into society. One may imagine that the effect of these attacks could cause a mass shift in public sentiment, for example reading about the violence some immigrants faced in the aftermath of the terrorist attacks in Stockholm (Ahlander & Yosufzai 2017). Legewi (2013) confirms this and finds that immigration and immigrants from similar backgrounds as terrorists face unfavorable effects, showing further evidence of this phenomena seen after the terrorist attack in Sweden. We have seen this topic resurface in Europe since 2017, for example recently the knife attack in Bristol inspired anti-immigration riots all around the United Kingdom and an uncontrollable wave of misinformation, even directing violence at migrants around the UK (BBC News, 2024).

Public sentiment and its fluctuations and changes are often studied by social scientists, in addition the effect of terrorist attacks has been studied plenty in the past decades, so its interesting to see how the research works together but also works against each other. Economou, Psarianos, and Kollias (2014) study use ten years of European Social Survey data and find that terrorist attacks do affect public sentiment. But this effect differs in size depending on which model of welfare state is used in the country, where they find that the effect of the attack is smaller in Scandinavian welfare models for example. Schüller (2013) finds interesting parallels about the effect of terrorism in America post 9/11 on German respondents, where they find that the level of education had a great effect on whether your

perceptions of immigrations changed post 9/11, the more highly educated had no significant changes to their perceptions of immigration policy. However level of education did not affect the individual concern over xenophobia, inspiring some questions about these differing effects and perhaps how it may influence a respondents sense of empathy towards migrants for example.

Vicari, Elroy, Komendantova and Yosipof (2024), study the Manchester bombing and its effects on public sentiment, however they do so from the lens of misinformation and the role of the media and social media. They find that terrorism-related events like the Manchester Arena bombing significantly contribute to the persistence of rumors and hate speech online, which in turn influences public sentiment and policy discussions on immigration. This is supported by many other research papers that specifically highlight the importance of social media, news outlets and education in the aftermath of terrorism and find that social media especially heightens emotional responses to terrorist attacks and can then further polarization on key issues such as immigration (Al-Rawi, 2020) (Nussio, 2020) (Oksanen et al., 2020).

Knowing these different stances, and knowing that public sentiments have changed a lot since the 2000s, I considered it interesting to study the case of Sweden in their historical context in 2017 (discussed later). In this thesis we will study the topic of European sentiments towards immigration and refugee policy, specifically the effect of terrorist attacks on Swedish sentiments in 2017.

This is a very relevant topic for all the reasons above, and with the increasingly globalized world and as the amount of refugees seeking asylum status in Europe will likely only increase. It is important to note how terrorist attacks could affect public sentiment and likely then make integration for immigrants harder, potentially flying the spinwheel and contributing to the problem of poor integration. This thesis aims to investigate this topic using the European Social Survey data from round 8, which conducts vast surveys across Europe about public sentiment from August 2016 to December 2017 using the Unified Ethical-Statistical Design (UESD) framework.

METHODOLOGY

This study aims to answer the research question in a causal way. Specifically the methodology of the paper by Muñoz, Falcó-Gimeno and Hernández (2019) is used in which they use the Unified Ethical-Statistical Design (UESD) framework. This framework is usually used using existing data and random unexpected events to draw conclusions of causal inference. The idea behind this is that we can see the change in some target variables as long as we have a balanced data source, in which there is no significant changes among other covariates. In this case study we use the Stockholm terrorist attack in 2017, which was unexpected and taking place during the field work of the survey.

As mentioned prior, the European Social Survey round 8 was used as the dataset for the analysis. The original dataset has over 250000 observations across over 500 variables. This was reduced to a focused dataset with just over 9000 observations and about 25 variables, to reflect the Swedish observations of the dataset and only the most relevant covariates. These relevant covariates encompass a wide range of variables including demographic, socio-economic, and of course information about the respondents sentiments surrounding immigration and refugee policy. Here only the most relevant covariates that may have realistically had an effect on the response of the target variables were kept (immigration and refugee policy sentiments). In addition to this, timestamps of each interview was kept.

To ensure validity of results, we started by replacing special codes representing missing or non-applicable responses (for example don't know, refusal to answer, etc) with NA values to maintain data quality. The selected covariates can be found in Annex 1, along with their definitions and possible values, along with the special codes that were not included. For the scope of this analysis this was deemed enough, however for future analysis this could be interesting to study and see if the inclusion of these special codes affect the treatment effect, and if for example the level of uncertainty surrounding sentiments on immigration and refugee policy had changed.

The centered time variable and treatment variable are created, where the treatment variable indicates whether the response was collected before or after the attack. The time_centered variable is used to control for the the general trends and other unrelated factors that may affect public sentiment towards immigration and refugee policy. Using this time centered variable acknowledges that sentiment is influenced by a range of factors, including media coverage (eg. As discussed earlier, social media, news) and broader societal changes, and

helps isolate the specific impact of the terrorist attack from these other influences. In the UESD framework, balance checks and robustness checks are heavily emphasized. For this reason two balance checks are conducted to ensure that the pre- and post-attack groups are comparable across all covariates.

Based on the results of these balance checks, we construct the models to model the treatment effect on our target variables. Three regression models are constructed to evaluate the impact of the terrorist attack on public sentiments. The first two models are made with a proxy for both sentiments towards immigration and also refugee policy. The variables chosen to represent the proxy are *imdfetn* and *gvrfgap*. *Imdfetn* refers to individual sentiment regarding whether the government should allow many/few immigrants of a different ethnic group from majority, thus capturing the public opinion on immigration policy quite well, especially in the case of Sweden the sentiments towards non-white or non-European immigration. *Gvrfgap* refers to individual sentiment about whether the government should be generous judging applications for refugee status, also providing a strong case for indicating public sentiment on refugee policy. Both of these target variables are done using a simple scale of 1 to 4 or 5. The third model is made using a combination of both of these target variables, as both variables are done on similar ordinal scales, combining them allows us to explore whether the intersection of these target variables provides a significant explanatory variable in this analysis. This combined approach is theoretically significant as well as it may reveal how closely linked public views on immigration and refugee policy are.

As outlined by Muñoz, Falcó-Gimeno, and Hernández (2019), the Unexpected Event during Surveys Design (UESD) methodology emphasizes the importance of conducting extensive robustness checks after running and analyzing the models. This framework is based on the fact that the validity of causal inference in observational studies, particularly those involving unexpected events, is dependent on the ability to control for biases and external factors. Thus these robustness checks are essential because they help to confirm that the observed effects are genuinely attributable to the event of interest and not to other confounding variables or random fluctuations.

They underline many of the threats to causal identification in the UESD—for instance, time trends, simultaneous events, and pre-existing biases between treatment and control groups. Robustness checks could be done by checking alternative models, propensity score matching, and placebo testing so that the derived causal relationship from the models are real and reliable. Such checks are particularly warranted since UESD does not operate under the

framework that characterizes experimental designs, assuring random assignment. Without such checks on robustness, one has to fear that results might come with a bias as they depend on violations of major assumptions, such as excludability and temporal ignorability. Hence the insistence within the UESD framework for robustness checks goes towards fully confirming well-causal claims in the highest sense of working out in highly complex real-world contexts. The approach helps to increase the credibility of research findings and to reduce the potential constraints from non-experimental designs, as in the case of this study.

The first step taken in the robustness checks involves testing for multicollinearity to ensure that the independent variables are not excessively correlated, which could distort the regression coefficients and undermine the reliability of the results. Following this, alternative models are analyzed by dropping certain covariates and comparing these reduced models to the original full models. This is done step by step, and with respect to all subsets of selected variables. With this the aim is confirming that the main findings are not being driven by the exclusion or inclusion of particular variables and that the main result remain consistent with the original model (that the treatment effect is insignificant and non-existing). Additionally, propensity score matching (PSM) is employed as a robustness check to address potential confounding relationships. The idea behind using PSM is to simulate a more randomized experimental design by balancing the distribution of observed covariates between the treatment and control groups. This method is helpful in reducing selection bias by the fact that comparisons are based on similar people, who differ mainly in exposure to the event of interest. Within similar propensity scores, this method matches people in order to isolate the treatment effect and diminish disturbances brought about by confounding variables that could lead to distortion of the causal inference.

For the final step, falsification tests are done to additionally check the veracity of the causal claims. These tests attempt to discern whether the original analysis may be detecting false relationships, underlying trends, or pre-existing conditions that have nothing to do with the event. Falsification tests test for the effects where no relationship should exist, thus acting as an important tool for ruling out the possibility that the observed effects are just a product of temporal patterns or other unobserved factors.

The full approach taken in this study is comprehensive and ensures that the analysis will be complete and unbiased, capable of being a source of credible causal effects. In so doing, the present approach surpasses the simpler ones and presents a more secure

basis by which to make a causal claim through such thoroughgoing checks on both the pre- and post-analysis.

EVENT AND CONTEXTUAL ANALYSIS

The 2017 terrorist attack in Stockholm, Sweden was significant for not only Sweden but also the Nordics and Europe at large. The attack took place on April 7, 2017 in central Stockholm. A hijacked truck was driven into crowds along Drottninggatan, one of Stockholm's main shopping streets, before crashing into a department store. The terrorist attack was carried out by a rejected asylum seeker from Uzbekistan, and was done motivated by islamic extremism and ultimately aligned with ISIS. The attack killed 5 and injured 14 people. (BBC News, 2018)

It is important to note that in 2017, Europe had just experienced the 2015 migrant crisis. Sweden at the time proudly welcomed 163 000 refugees, boasting idealism about a Europe without walls, welcoming migrants. Sweden ended up bearing the weight of this 'unshared idealism' with mostly Germany. (Lindberg, 2021) While it wasn't obvious in Sweden, as there was an internal debate prior to welcoming all the migrants, with already quite a polarized view on Islam in Sweden and immigration (European Sources Online, 2015). However there was strong public support for immigration, the King of Sweden at the time even advocated for the migrants and the mass displacement that was happening in the Middle East. The Swedish Prime Minister and their party also advocated for welcoming more migrants in the EU at large, and encouraged other member states to open their borders. (The Local, 2015)

DATA ANALYSIS AND RESULTS

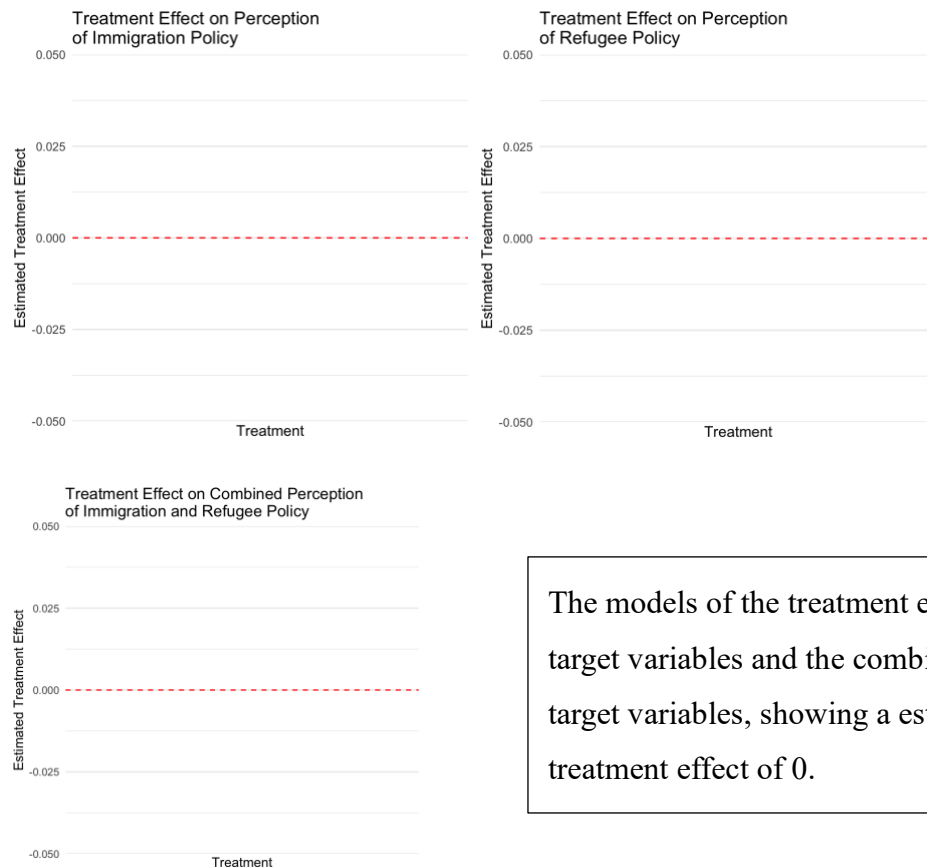
To begin the analysis, basic descriptive statistics were done to provide an overview of the dataset, and confirm feasibility of examining the unexpected event's effect on the target variables (by confirming that there are enough observations both pre- and post-attack). The reduced dataset under analysis consists of 9,230 observations across 27 variables, providing a relevant and comprehensive overview of the variables relevant to the analysis in question.

This included for example various socio-demographic factors, general awareness metrics, and the target variables which were proxies for attitudes towards immigration and refugees.

The dataset includes both continuous and categorical variables, with 23 continuous and 4 discrete variables. The data is cleaned to ensure a good-quality dataset, this included removing the rows with the ‘special cases’ for simplicity’s sake. These special cases are outlined in Annex 1, and most typically include response options such as ‘Refusal’ and ‘Don’t know’. After this, the dataset is complete, with no missing observations, which encourages robustness in the rest of the analysis. In the report of the descriptive analysis of the dataset, we see some valuable information about the dataset, for example in the correlation matrix. As could be expected, many of the variables capturing information about sentiments towards immigrants or immigration policy are correlated. Based on these, for this reason it was chosen to choose a proxy for immigration policy (*imdfetn*) and refugee policy (*gvrfgap*) and to keep these correlating trends in mind in future selection of control variables for our regression models.

Once the descriptive statistics were done to get the overview and confirm feasibility, a balance check was done using 2 methods to confirm results. Both methods showed small differences between the control and treatment group. The results of the confirming analysis of the balance (Annex 2) show very negligent differences between pre- and post- attack data between all covariates. The only noticeable difference seen is with age and region, with slight imbalances. The average age is about 2 years older in the post-attack treatment group, these differences were noted for the next steps of the analysis. Since the differences were very minimal, no further action was taken to improve the balance of the two groups.

In the next step the analysis moved to modeling the target variables using the treatment effect, controlling for the variables that had imbalances, in this case region and age and also using the *time_centered* variable. Additionally using the *time_centered* variable as a control variable as well, to control for possible anticipatory and other factors related to timing of the attack. This was done in 3 models, for the 2 proxies for the target variables, sentiments towards immigration, and refugee policy. Additionally the third model explored the sum of these two target variables.



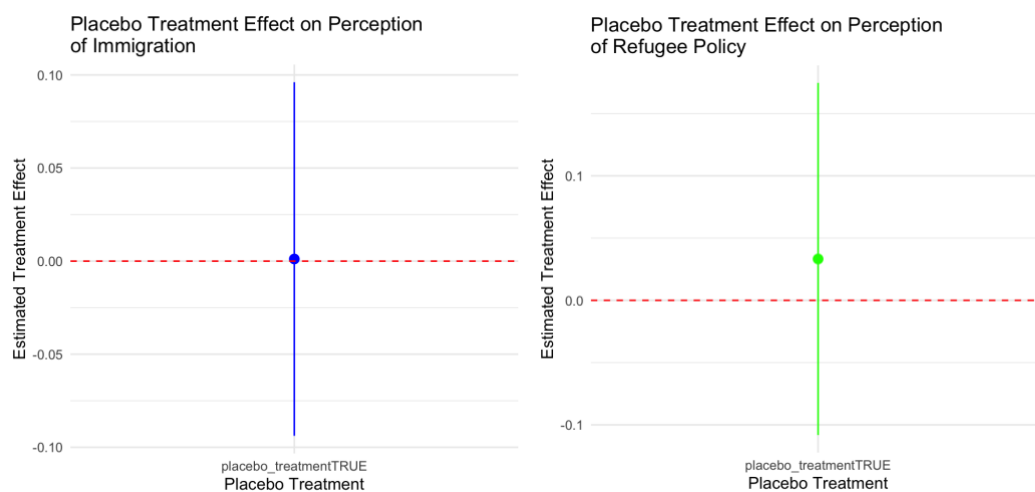
The models of the treatment effect on the 2 target variables and the combination of the 2 target variables, showing a estimated treatment effect of 0.

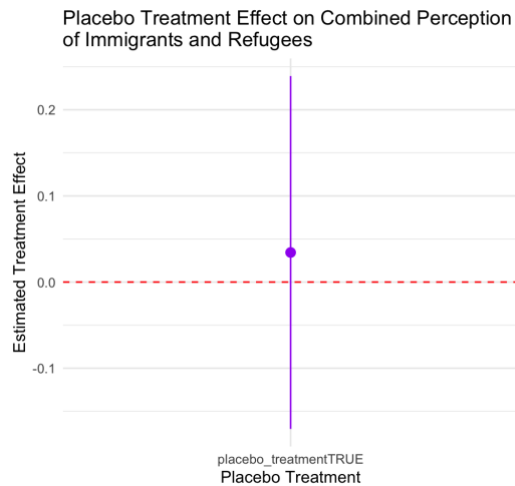
In all 3 models, the treatment effect was insignificant and showed no treatment effect. This means that there was no statistically significant impact of the terrorist attack on the sentiments of the Swedish respondents in relations to immigration, refugee policy or the combination of these 2 sentiments according to these 3 models. This non-existent treatment effect can be seen in the visualizations of all 3 models above. This is also confirmed by conducting a T-test between the treatment and the control group in this analysis, confirming no significant difference in the target variables between these groups.

After these results, we move to further verifying the results using various methods of checking robustness. First the variance inflation factor is checked for all 3 models, and we confirm that multicollinearity is not a concern for these models. Next alternative models were tested systematically, where all the subsets of the variables were tested to ensure the consistency and reliability of the results of the original model, and to see if any alternate versions of the model would prove to make the treatment effect significant. In this part of the analysis about 40 models were tested, none of them significantly improved from the original models. Some variables, such as age and region, consistently influenced perceptions (were significant in the models). In the final alternate models tested, the interaction variable between age and region was also tested, this was also significant, and suggests an interesting

relationship between age and region in influencing perceptions. This suggests that the effect of these 2 variables may affect perceptions differently depending on the other, for example youth in large cities versus rural areas may have been influenced differently. However the treatment variable remained non-significant across all models. Thus the validity and reliability of the results of the original model can be confirmed.

To further check robustness, propensity score matching was used to further validate results. This method matches survey respondents based on other covariates, so for example a respondent from before the attack, is matched with a similar respondent from after the attack and the model uses this matching to draw causal results. The results show that while the matching models were slightly better fitting models that controlled for confounding slightly better, the models were still insignificant and confirmed that the original conclusions from the original models were valid. Finally, a falsification test is conducted where we create a ‘placebo effect’ or a artificial treatment assigned to the pre-attack time period to see if there are any pre-existing trends or biases that may have affected the results. This test also returns 3 non-significant models further confirming that the original results are not a product of pre-existing trends or conditions, and thus can be used to make causal conclusions.





The three placebo models showing no significant effect of the placebo effect and confirming the validity of the results of the original models.

DISCUSSION

This paper finds that in the case of the Stockholm terrorist attack of 2017, the islamic terrorist attack had no effect on public sentiment towards immigration and refugee policy in Sweden. These results are quite interesting and could have possibly been hypothesized from past literature surrounding the effect of terrorist attacks and their surprisingly negligible effects on public sentiment. (Muñoz, Falcó-Gimeno and Hernández, 2019) (Andersen, Mayerl, 2018) Where for example Becker and Rubinstein (2011) find that that while terrorism generates significant fear, the direct impact on public sentiment and behavior is often negligible when compared to the broader economic consequences. Additionally others hypothesize it is the media coverage and public discourse that follows terrorist attacks that may be the cause of shifting sentiments, instead of the terrorist attacks themselves. (Vicari et. al., 2024) (Al-Rawi, 2020) (Nussio, 2020) (Oksanen et al., 2020) It is important to note that this was conducted in Sweden with one of the most highly educated societies in the world, very soon after a very public effort of Sweden's to rise above the European standard during the migrant crisis of 2015. It could be hypothesized that Swedish society was still hopeful for positive outcomes of their generosity towards migrants, and didn't have much experience with terrorism or violence from migrants. In addition we also know that the scandinavian welfare state model has also proved to result in a smaller effect of terrorist attacks on public sentiment (Economou, et al. 2014). Nevertheless, the conclusion of this analysis is interesting and not

my initially hypothesized result, especially considering the social context immigration sentiments of European society today.

In the years since 2017, Sweden's crime rate has soared, specifically gun and gang violence has been increasing, being an example of the possible negative consequences of insufficient integration of migrants to the rest of Europe. (Milne, 2023) In the face of these new circumstances in Swedish society, it inspires the question of if these results would be replicated in Swedish society today. Especially when looking at the British anti-immigration riots happening in the aftermath of the knife attack in Bristol. (BBC, 2024) It would also be interesting to explore similar results from different societies in the years after the migrant crisis and today, after the COVID-19 pandemic when nationalism and xenophobia are on the rise again in Europe.

CONCLUSION

To conclude, this analysis examines the effect of terrorist attacks on public sentiment, using the case of the Swedish respondents of the European Social Survey and the Stockholm terrorist attack of 2017. The analysis finds no significant effect of the treatment variable, thus coming to the conclusion that there was no significant effect of the terrorist attack on neither the Swedish public's sentiments towards immigration nor refugee policy. This analysis uses the UESD framework to come to causal claims, which typically uses unexpected events and pre-existing data. The framework highlights the importance of thorough robustness checks, which this analysis complies with, testing many different methods to confirm the results of the three models modeling the three target variables to confirm the validity of the results of the analysis.

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All data and replicable analysis can be found and accessed here,

<https://github.com/alexandra-rose/CSS-TFM>

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ANNEX

Annex 1.

Table of all covariates and their definitions and values.

Variable	Definition	Value Options
idno	Respondent's identification number	Unique identifier
cntry	Country	Various country codes (e.g., "SE" for Sweden, "FR" for France)
interview_datetime	Date and time of the interview	Date and time in various formats
nwspol	News about politics and current affairs, watching, reading or listening, in minutes	7777 = Refusal, 8888 = Don't know, 9999 = No answer
netusoft	Internet use, how often	1 = Never, 2 = Only occasionally, 3 = A few times a week, 4 = Most days, 5 = Every day, 7 = Refusal, 8 = Don't know, 9 = No answer

Variable	Definition	Value Options
trstplc	Most people can be trusted or you can't be too careful	0 = You can't be too careful, 1-10 = Scale from "You can't be too careful" to "Most people can be trusted", 77 = Refusal, 88 = Don't know, 99 = No answer
prtvbse	Party voted for in last national election, Sweden	Various party codes (specific to each country, this variable only has Swedish parties)
imdfetn	Allow many/few immigrants of different ethnic group from majority	1 = Allow many, 2 = Allow some, 3 = Allow few, 4 = Allow none, 7 = Refusal, 8 = Don't know, 9 = No answer
impcntr	Allow many/few immigrants from poorer countries outside Europe	1 = Allow many, 2 = Allow some, 3 = Allow few, 4 = Allow none, 7 = Refusal, 8 = Don't know, 9 = No answer
imbgeco	Immigrants make country's economy better or worse	0 = Worse, 10 = Better, 77 = Refusal, 88 = Don't know, 99 = No answer
imwbcnt	Immigrants make country worse or better place to live	0 = Worse, 10 = Better, 77 = Refusal, 88 = Don't know, 99 = No answer
rlgblg	Belonging to particular religion or denomination	1 = Yes, 2 = No, 7 = Refusal, 8 = Don't know, 9 = No answer
rlgdgr	How religious are you	0 = Not at all religious, 10 = Very religious, 77 = Refusal, 88 = Don't know, 99 = No answer
gvrfgap	Government should be generous judging applications for refugee status	1 = Agree strongly, 5 = Disagree strongly, 7 = Refusal, 8 = Don't know, 9 = No answer

Variable	Definition	Value Options
rfgfrpc	Most refugee applicants not in real fear of persecution in own countries	1 = Agree strongly, 5 = Disagree strongly, 7 = Refusal, 8 = Don't know, 9 = No answer
rfgbfml	Granted refugees should be entitled to bring close family members	1 = Agree strongly, 5 = Disagree strongly, 7 = Refusal, 8 = Don't know, 9 = No answer
gndr	Gender	1 = Male, 2 = Female, 7 = Refusal, 9 = No answer
agea	Age of respondent	Age in years, 7777 = Refusal, 9999 = No answer
eisced	Highest level of education, ES - ISCED	1 = Less than lower secondary, 7 = Higher tertiary education, 77 = Refusal, 88 = Don't know, 99 = No answer
uempla	Doing last 7 days: unemployed, actively looking for job	1 = Yes, 2 = No, 7 = Refusal, 8 = Don't know, 9 = No answer
hinctnta	Household's total net income, all sources	Various categories depending on country, 77 = Refusal, 88 = Don't know, 99 = No answer
region	Region	Region-specific codes

Annex 2.

Table of results of the balance test on control and treatment group.

Balance Measures for Treatment Effect			
Variable	Type	Diff.Un	Diff.Adj
perception_immigrants	Contin.	0.0054264536	
perception_refugees	Contin.	-0.0177868606	
nwspol	Contin.	0.0201064312	
netusoft	Contin.	-0.0289401691	
trstplc	Contin.	-0.0027779964	
prtvbse	Contin.	-0.0417184729	
imbgeco	Contin.	-0.0087649060	
imwbcnt	Contin.	-0.0087606139	
rlgbg_2	Binary	-0.0147614235	
gvrfgap	Contin.	-0.0177868606	
rfgfrpc	Contin.	-0.0070416798	
rfgbfml	Contin.	0.0160152324	
gndr_2	Binary	0.0108830035	
agea	Contin.	0.1199896202	
eisced	Contin.	0.0041310412	
uempla	Binary	-0.0010684061	
hinctnta	Contin.	-0.0139943432	
region_SE110	Binary	0.0080543718	
region_SE121	Binary	0.0008637517	

Balance Measures for Treatment Effect			
Variable	Type	Diff.Un	Diff.Adj
region_SE122	Binary	0.0030756697	
region_SE123	Binary	-0.0018832157	
region_SE124	Binary	-0.0047709447	
region_SE125	Binary	0.0009654442	
region_SE211	Binary	0.0004419605	
region_SE212	Binary	-0.0005342031	
region_SE213	Binary	0.0015455570	
region_SE214	Binary	-0.0008787023	
region_SE221	Binary	0.0004822990	
region_SE224	Binary	0.0016425951	
region_SE231	Binary	-0.0015416783	
region_SE232	Binary	-0.0035862480	
region_SE311	Binary	0.0011842735	
region_SE312	Binary	0.0020076867	
region_SE313	Binary	-0.0013588857	
region_SE321	Binary	0.0020990831	
region_SE322	Binary	-0.0029756697	
region_SE331	Binary	-0.0023964032	
region_SE332	Binary	-0.0024367417	